

I claim:

1) In a scanner adapted to scan documents by moving a linear array of detection devices over a document in a first direction, the improvement which comprises vibrating in accordance with a pre-determined pattern said linear array of devices in a direction perpendicular to said first direction in order to reduce Moiré patterns.

2) The scanner recited in claim 1 wherein said pre-determined pattern is a pseudo random pattern of motion.

3) The scanner recited in claim 1 wherein the magnitude of said vibration is less than half the width of a detection element.

4) In a scanner which scans documents by moving a linear array of detectors relative to a document in a first direction, the improvement which comprises randomly vibrating said linear array of detectors in a manner that includes a directional component non-aligned with said first direction, whereby Moiré patterns in scan data generated by said detectors are reduced.

5) The scanner recited in claim 4 wherein said vibration is a pseudo random pattern of vibration.

6) The scanner recited in claim 4 wherein the magnitude of said vibration is less than half the width of a detection element.

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7) A scanner which includes a linear array of detector elements each of which generates output signals, at least some of said detector elements each having a width equal to a first value,

means for moving said array over said document in a pre-determined pseudo random pattern of motion in a first direction,

means for moving said array of detectors in a direction perpendicular to said first direction,

means for combining the output signals from said detectors to generate a square array of pixel values which represent an image, each pixel having a size equal to said first value,

whereby Moiré patterns in the said image are reduced.

8) A scanner which includes a linear array of detector elements to produce scan data

corresponding to an image comprising,

a device for moving said array over said document in a direction "y",

a transducer for moving said array of detectors in a direction "x", direction x being non-aligned with direction "y", and

a drive circuit for applying a control signal to said transducer to effect random movement in said direction 'x,'

whereby Moiré patterns in the said image are reduced.

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9) In a scanner adapted to scan documents by moving a linear array of photo-sensors over a document in a first direction,

the improvement which comprises vibrating in accordance with a pseudo random pattern said linear array of photo-sensors in a direction non-aligned with said first direction in order to reduce Moiré patterns.

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10) The method of scanning a document which consists of a series of rows of areas with a linear array of detectors, the distance between the center points of said detectors equaling a first value, said rows being arranged in a direction "y", said method comprising, positioning said detectors over a first row of said document, reading the value of the output of said detectors to generate output signals, moving said detectors over a second row of said document and also moving said detectors in a direction "x", direction "x" being perpendicular to said direction "y", repeating said positioning, reading and moving steps until said entire document has been scanned a computational device for combining the output signals from said detectors to generate an image with pixels, the pixel pitch of which equal said first value.

11) In a scanner which scans documents by moving a linear array of detectors over a document in a first direction, the improvement which comprises means for vibrating said linear array of detectors in a direction non-aligned with said first direction, said vibration being in accordance with a pseudo random pattern of motion, whereby Moiré patterns are reduced.

Sub 2.5b ✓
12) A flatbed scanner for documents, said scanner including a linear array of detectors which is moved over the length of said document, the length of said linear array at least equaling the width of said document, each of said detectors covering a first distance, means for vibrating said linear array in a direction perpendicular to the length of said document, said vibration being in accordance with a pseudo random pattern of motion,

means for generating an image which has a pixel size equal to said first distance from the output of said detectors,
whereby Moiré patterns are reduced.

11 13) A method of scanning a document including

moving a linear array of detectors over the length of said document, the length of said linear array at least equaling the width of said document, said detectors each imaging a document area having a width "x",

vibrating said linear array in a direction non-aligned with the length of said document,

said vibration being in accordance with a random pattern of motion,

generating an image with a pixel pitch "x" from the output of said detectors,

whereby Moiré patterns are reduced.

11 14) The scanner recited in claim 13 wherein the magnitude of said vibration is less than half the width of a detector.